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**Remington's  
Pharmaceutical  
Sciences**

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Fig 87-11. Removing cocoa butter suppositories from mold (courtesy, Webcon Div, Alcon).

suppositories. Molds should be dry for polyethylene glycol suppositories.

After pouring into tightly clamped molds the suppositories and mold are allowed to cool thoroughly using refrigeration on a small scale or refrigerated air on a larger scale. After thorough chilling any excess suppository mass should be removed from the mold by scraping, the mold opened and the suppositories removed. It is important to allow cooling time adequate for suppository contraction. This aids in removal and minimizes splitting of the finished suppository.

**Packaging and Storage**—Suppositories often are packaged in partitioned boxes which hold the suppositories upright. Glycerin and glycerinated gelatin suppositories often are packaged in tightly closed screw-capped glass containers. Though many commercial suppositories are wrapped individually in aluminum foil, or PVC-polyethylene strip-packaging is commonplace.

The most recent innovation in suppository manufacture is the procedure for molding the suppository directly into its primary packaging. In this operation the form into which the suppository mass flows consists of a series of individual molds formed from plastic or foil. After the suppository is poured and cooled the excess is trimmed off and the units are sealed and cut into 3s or 6s as desired. Cooling and final cartoning then can be carried out.

Suppositories with low-melting ingredients are best stored in a cool place. Theobroma oil suppositories, in particular, should be refrigerated.

## Other Medicated Applications

### Cataplasms (Poultices)

Poultices represent one of the most ancient classes of pharmaceutical preparations. A poultice, or cataplasm, is a soft, moist mass of meal, herbs, seed, etc, usually applied hot in cloth. The consistency is gruel-like, which is probably the origin of the word poultice.

Cataplasms were intended to localize infectious material in the body or to act as counterirritants. The materials tended to be absorptive, which, together with heat accounts for their popular use. None is now official in the USP. The last official product was Kaolin Poultice NF IX.

### Pastes

Pastes are concentrates of absorptive powders dispersed (usually) in petrolatum or hydrophilic petrolatum. They

are stiff to the point of dryness and reasonably absorptive in view of the petrolatum base. Pastes often are used in the treatment of oozing lesions where they act to absorb serous secretions. Pastes also are used to restrict the area of treatment by acting as an absorbent and physical dam.

Pastes adhere reasonably well to the skin, and are poorly occlusive. For this reason they are suited for application on and around moist lesions. The heavy consistency of pastes imparts a degree of protection and may, in some instances, make the use of bandages unnecessary. Pastes are less macerating than ointments.

Because of their physical properties pastes easily may be removed from the skin by the use of mineral oil or a vegetable oil. This is particularly true when the underlying or surrounding skin is traumatized easily.

An official paste is the conventional Zinc Oxide Paste; another is Triamcinolone Acetonide Dental Paste, for the specialized use the name implies.

### Powders

Powders for external use usually are described as dusting powders. Such powders should have a particle size of not more than 150  $\mu$ m; ie, less than 100-mesh, to avoid any sensation of grittiness which could irritate traumatized skin. Dusting powders usually contain starch, talc and zinc stearate. Absorbable Dusting Powder USP is comprised of starch treated with epichlorohydrin, with not more than 2.0% magnesium oxide added to maintain the modified starch in impalpable powder form; as it is intended for use as a lubricant for surgical gloves it should be sterilized (by autoclaving) and packaged in sealed paper packets.

The fineness of powders often is expressed in terms of mesh size, with impalpable powders generally in the range of 100- to 200-mesh (149-125  $\mu$ m). Determination of size by mesh analysis becomes increasingly difficult as particle size decreases below 200-mesh.

### Dressings

Dressings are external applications resembling ointments usually used as a covering or protection. Petrolatum Gauze is a sterile dressing prepared by adding sterile, molten, white petrolatum to pre-cut sterile gauze in a ratio of 60 g of petrolatum to 20 g of gauze. Topical antibacterials are available in the form of dressings.

### Creams

Creams are viscous liquid or semisolid emulsions of either the o/w or w/o type. Pharmaceutical creams are classified as water-removable bases and are described under *Ointments*. In addition to ointment bases, creams include a variety of cosmetic-type preparations. Creams of the o/w type include shaving creams, hand creams and foundation creams; w/o creams include cold creams and emollient creams.

### Plasters

Plasters are substances intended for external application made of such materials and of such consistency as to adhere to the skin and attach to a dressing. Plasters are intended to afford protection and support and/or to furnish an occlusive and macerating action and to bring medication into close contact with the skin. Medicated plasters, long used for local or regional drug delivery, are the prototypical transdermal delivery system.

Plasters usually adhere to the skin by means of an adhesive material. The adhesive must bond to the plastic backing and to the skin (or dressing) with proper balance of cohesive strengths. Such a proper balance provides for re-